

Remarks/Arguments

The Applicants respectfully request further examination and reconsideration in view of the above amendments and arguments set forth fully below. Claims 1, 8-27, 29-33, 35-130, and 132 were pending. Claims 9, 11, 15, 18, 20-27, 33, 35-37, 39, 42, 43, 45-127 are withdrawn from consideration. Within the Office Action, Claims 1, 8, 10, 12-14, 16, 17, 19, 29-32, 38, 40, 41, 44, 128-130 and 132 are rejected. By the above amendments, Claims 1, 129, and 132 are amended. New Claims 133-135 have been added. No new matter has been added. Accordingly, Claims 1, 8, 10, 12-14, 16, 17, 19, 29-32, 38, 40, 41, 44, 128-130 and 132 are currently pending.

Claim Rejections Under 35 U.S.C. §112

It is stated within the Office Action that Claim 132 is rejected under 35 U.S.C. §112, second paragraph, because the Examiner states, on page 3, that “All of these structures are three dimensional and hence by definition cannot lie on a common plane (a plane being two dimensional.” Applicants respectfully disagree. All matter is three dimensional, but two objects or elements or items can be positioned, configured or directed along a plane. For example, cars traveling on flat streets are three dimensional, but their motion is restricted along a plane defined by the surface of the roads. In the instant Figure 3B, cardinal co-ordinates X, Y and Z are provided to show the relation of the several elements. With respect to the body 106, it is clear from the drawing that the inlet 108 and outlet 109 along with the several fingers (i.e. 118) are configured to direct fluid along one plane of motion. With respect to the inlet 108, outlet 109 and fingers 118, fluid is restricted in motion such that it cannot flow in the Z direction as defined in Figure 3B. Fluid is three dimensional, but the body 106 is configured such that its displacement or motion is restricted along the plane X-Y as defined in the co-ordinates provided, which is parallel to a bottom surface 132 of the body 106. As a result, the fluid is restricted in terms of flow in the inlet 108, the outlet 109 and fingers 118 in a direction that is parallel to the bottom surface 132 of the body 106. The person of ordinary skill having the benefit of this application will readily appreciate that the cardinal co-ordinates are given merely as a reference point and are not intended to be restricting. To that end, Applicants have amended the wording in Claim 132 to that effect. The Applicants respectfully request withdrawal of these rejections under 35 U.S.C. §112.

Claim Rejections Under 35 U.S.C. §103

Within the Office Action, Claims 1, 8, 10, 12-14, 17, 19, 32, 38, 40, 128-130 and 132 are rejected under 35 U.S.C. §103(a) as obvious over the combined teachings of U.S. Patent No. 5,388,635 to Gruber et al. (hereinafter “Gruber”) and U.S. Patent No. 5,761,037 to Anderson et al. (hereinafter “Anderson”). The Applicants respectfully disagree.

Independent Claim 1 recites a heat exchanger comprising: a body having a conducting portion configured to be configured to conduct heat from the heat source to a heat exchanging layer configured within the body, the body including at least one inlet port and at least one outlet port, wherein the at least one inlet port directs fluid from an inlet channel coupled to the at least one inlet port to a first of one or more fingers, a second of one or more fingers, or both of the first and the second of one or more fingers, wherein the first of the one or more fingers branch from the inlet channel, wherein the second of the one or more fingers branch from first of one or more fingers, so that the fluid is able to flow from the first of the one or more fingers to the second of the one or more fingers to the heat exchanging layer via an intermediate layer with a plurality of conduits which extend therethrough, wherein at least a portion of one of the first of the one or more fingers is nonparallel to a portion of at least one of the second of the one or more fingers, the heat exchanging layer includes a porous microstructure disposed thereon and is configured to distribute the fluid and to pass the distributed fluid therethrough.

Claim 1 has been amended to clarify that the second of one or more fingers branches from the first of one or more fingers. Within the Office Action, the Examiner notes that the response of March 10, 2011 is in conflict with the response of November 9, 2010 with respect to the definition of the several fingers described. The response of November 9, 2010 states that “Accordingly, the first of one or more fingers can be 118A (the first 118A that branches out from the inlet channel), which points at a direction parallel to x-axis. [Present application, Figures 3B and 21] The second of one or more fingers can be 118B and 118C, which point at a direction parallel to y-axis.” [emphasis added]

However, in Figure 3B, the first finger from which 118A emanates is not labeled. For greater clarity, Figure 3A is referenced. An example of a first fingers is, in the embodiment of Figure 3A, 116 that enables fluid flow from the inlet 108. Second fingers such as 118 and 119 emanate from the first finger 116. Thus, it follows naturally that fluid flows from the first fingers such as 116 to second fingers such as 118 and 119 as are shown by the directional arrows provided.

Gruber is cited for teaching “the at least one inlet port directs fluid from an inlet channel coupled to the at least one inlet port to a first of one or more fingers, a second of one or more fingers, or both of the first and the second of one or more fingers, wherein the first of the one or more fingers branch from the inlet channel, wherein the second of the one or more fingers branch from the inlet channel.” Applicants maintain that Gruber does not teach any embodiment where fluid flows from a first of one or more fingers to a second of one or more fingers, but rather that all fingers (30, Fig. 8B of Gruber) flow simultaneously. Gruber does not teach the flowing of any fluid from one finger to another finger, only from an inlet port 42 to the several fingers 30 all at the same time. Although Anderson is cited for teaching other claim elements, Anderson also does not teach the claim elements discussed above.

It is well known that all claim elements must be taught or suggested in the prior art. As discussed above, there is no teaching of a body having a second of one or more fingers receiving a fluid from a first of one or more fingers.

Claims 8, 10, 12-14, 17, 19, 32, 38, 40, 128-130, 132-134 are dependent on independent Claim 1. Since independent Claim 1 is an allowable base claim, Claims 8, 10, 12-14, 17, 19, 32, 38, 40, 128-130 and 132 are all also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 1, 8, 10, 12-14, 17, 19, 32, 38, 40, 128-130 and 132 are rejected under 35 U.S.C. §103(a) as obvious over the combined teachings of Gruber, Anderson and Chu (of record) or Frey (of record). The Applicants respectfully disagree.

Applicants maintain that Gruber and Anderson do not teach a body wherein fluid is able to flow from the first of the one or more fingers to the second of the one or more fingers to the heat exchanging layer. Further, Chu and Frey do not teach this claim element, as neither teach any number of fingers branching out from one another. For at least these reasons, independent Claim 1 is allowable over the teachings of Gruber, Anderson, Chu, Frey and their combination.

Claims 8, 10, 12-14, 17, 19, 32, 38, 40, 128-130 and 132 are dependent on independent Claim 1. Since independent Claim 1 is an allowable base claim, Claims 8, 10, 12-14, 17, 19, 32, 38, 40, 128-130 and 132 are all also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 1, 8, 10, 12-14, 17, 19, 32, 38, 40, 128-130 and 132 are rejected under 35 U.S.C. §103(a) as obvious over the combined teachings of Gruber/Anderson or Gruber/Anderson/Chu/Frey as applied to claims 1, 8, 10, 12-14, 17, 19, 32, 38, 40, and 128-132

above and further in view of either Hou (of record) or Messina (of record). The Applicants respectfully disagree.

Applicants maintain that Gruber and Anderson do not teach a body wherein fluid is able to flow from the first of the one or more fingers to the second of the one or more fingers to the heat exchanging layer. Further, Chu and Frey do not teach this claim element, as neither teach any number of fingers branching out from one another. For at least these reasons, independent Claim 1 is allowable over the teachings of Gruber, Anderson,

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Within the Office Action, Claim 16 is rejected under 35 U.S.C. §103(a) as being unpatentable over the combined teachings of Gruber/Anderson alone or Gruber/Anderson/Chu/Frey alone or in view of Hou or Messina as applied to claim 1 above, and further in view of Herrell (of record). The Applicants respectfully disagree.

Claim 16 is dependent on independent Claim 1. Since independent Claim 1 is an allowable base claim, Claim 16 is also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 29-32 are rejected under 35 U.S.C. §103(a) as being unpatentable over the combined teachings of Gruber/Anderson alone or Gruber/Anderson/Chu/Frey alone or in view of Hou or Messina as applied to claim 1 above, and further in view of Tonkovich (of record). The Applicants respectfully disagree.

Claims 29-32 are dependent on independent Claim 1. Since independent Claim 1 is an allowable base claim, Claims 29-32 are also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 1, 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130 and 132 are rejected under 35 U.S.C. §103(a) as obvious over the combined teachings of Gruber in view of the Jiang (of record). The Applicants respectfully disagree.

Applicants maintain that Gruber and Anderson do not teach a body wherein fluid is able to flow from the first of the one or more fingers to the second of the one or more fingers to the heat exchanging layer. Further, Jiang does not teach this claim element, as neither teach any

number of fingers branching out from one another. For at least these reasons, independent Claim 1 is allowable over the teachings of Gruber, Anderson, and Jiang.

Claims 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130, and 132 are dependent on independent Claim 1. Since independent Claim 1 is an allowable base claim, Claims 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130, and 132 are all also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 1, 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130 and 132 are rejected under 35 U.S.C. §103(a) as obvious over the combined teachings of Gruber in view of Jiang and Chu or Frey. The Applicants respectfully disagree.

Applicants maintain that Gruber and Anderson do not teach a body wherein fluid is able to flow from the first of the one or more fingers to the second of the one or more fingers to the heat exchanging layer. Further, Neither Jiang, Chu nor Frey do not teach this claim element, as neither teach any number of fingers branching out from one another. For at least these reasons, independent Claim 1 is allowable over the teachings of Gruber, Anderson,

Claims 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130, and 132 are dependent on independent Claim 1. Since independent Claim 1 is an allowable base claim, Claims 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130, and 132 are all also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 1, 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130 and 132 are rejected under 35 U.S.C. §103(a) as obvious over the combined teachings of Gruber in view of O'Neill (of record) and Tonkovich. The Applicants respectfully disagree.

Applicants maintain that Gruber and Anderson do not teach a body wherein fluid is able to flow from the first of the one or more fingers to the second of the one or more fingers to the heat exchanging layer. Further, O'Neill and Tonkovich do not teach this claim element, as neither teach any number of fingers branching out from one another. For at least these reasons, independent Claim 1 is allowable over the teachings of Gruber, Anderson, O'Neill and Tonkovich.

Claims 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130, and 132 are dependent on independent Claim 1. Since independent Claim 1 is an allowable base claim, Claims 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130, and 132 are all also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 1, 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130, and 132 are rejected under 35 U.S.C. §103(a) as obvious over the combined teachings of Gruber in view of O'Neill and Tonkovich, and Chu or Frey. The Applicants respectfully disagree.

Applicants maintain that Gruber and Anderson do not teach a body wherein fluid is able to flow from the first of the one or more fingers to the second of the one or more fingers to the heat exchanging layer. Further, O'Neill, Tonkovich, Chu and Frey do not teach this claim element, as neither teach any number of fingers branching out from one another. For at least these reasons, independent Claim 1 is allowable over the teachings of Gruber, Anderson, , Chu, Frey, O'Neill and Tonkovich.

Claims 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130, and 132 are dependent on independent Claim 1. Since independent Claim 1 is an allowable base claim, Claims 8, 10, 12-14, 17, 19, 29-32, 38, 40, 128-130, and 132 are all also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 41 and 44 are rejected under 35 U.S.C. §103(a) as obvious over any of the prior art references as applied to Claim 1 above, and further in view of Cardella, of record. The Applicants respectfully disagree.

Claims 41 and 44 are dependent on independent Claim 1. Since independent Claim 1 is an allowable base claim, Claims 41 and 44 are both also allowable as being dependent upon an allowable base claim.

Applicants' responses that are applicable to all prior Office Actions are all herein incorporated by reference.

New Claims 133-134

New Claim 133 is directed toward the shape of the several fingers. As is seen in every figure of the instant disclosure, each finger has a top surface and a bottom surface that are parallel. The fingers of Gruber (30, Fig. 8A; 216, Fig 22) are tapered in every single embodiment. There is no teaching, hint or suggestion of non-tapered fingers. Anderson, Chu, Frey, Tonkovich, Jiang, and O'Neill have not been introduced to teach fingers of any shape. As a result, Claim 133 is allowable over the combination of Gruber with any of Anderson, Chu, Frey, Tonkovich, Jiang, and O'Neill.

New Claim 134 is directed toward a third of one or more fingers for directing fluid toward the outlet, and a fourth of one or more fingers for directing fluid from at least one of the conduits to the third of one or more fingers. Referring back to Figure 3A, a third of one or more finger 122 is shown directing fluid toward the outlet 109 as indicated by the arrows. A fourth of one or more fingers, 118 or 120 are shown directing fluid from at least one conduit 120 to the third of one or more fingers 122.

New Claim 135 is an independent Claim combining the several elements of the previous claims. Referring to Figure 3A, a manifold having an inlet port 108 and an outlet port 109 is shown. An inlet finger 116 and an outlet finger 122 are disclosed. A plurality of secondary inlet fingers 118 have a conduit 119(A-D) for allowing the passage of fluid through the bottom surface of the manifold. Similarly, a plurality of secondary outlet fingers 120 have at least one conduit 121 for allowing the passage of fluid through the bottom surface of the manifold. All fluid paths are parallel to a surface of the manifold. Stated differently, all fluid paths are parallel to a plane defined by the co-ordinates X-Y. Figure 3B shows an intermediate layer having a plurality of openings corresponding to the conduits. Figure 10A shows a heat exchanging layer having a porous microstructure. Additionally, each of these elements have been introduced in the several claims originally filed.

Accordingly, no new matter is introduced in Claims 133, 134, or 135.

Conclusion

For the reasons given above, the Applicants respectfully submits that the claims are in a condition for allowance, and allowance at an early date would be appreciated. If the Examiner has any questions or comments, the Examiner is encouraged to call the undersigned at (408) 530-9700 so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
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